GE Healthcare

Getting Started with

Typhoon™ FLA 9000

Original instructions

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1 Introduction

Purpose of the Operating Instructions

The Operating Instructions provide you with the instructions needed to handle the Typhoon FLA 9000 system in a safe way.

Prerequisites

In order to operate the Typhoon FLA 9000 in the way it is intended, the following prerequisites must be fulfilled:

- You have read and understood the safety instructions outlined in this manual.
- The instrument is installed according to the instructions in this manual.

In this chapter

This chapter contains important user information, and a general description of the Typhoon FLA 9000 and its intended use.

1.1 Important user information

Read this before using the Typhoon FLA 9000

All users must read this entire manual to fully understand the safe use of Typhoon FLA 9000.

Intended use

Typhoon FLA 9000 is a fast laser scanner optimized for quantitative phosphorimaging, ECL Plus Westerns, visible single fluorescence and gel documentation.

Typhoon FLA 9000 is intended for research use only, and shall not be used in any clinical procedures, or for diagnostic purposes.

Safety notices

This user documentation contains WARNINGS, CAUTIONS and NOTICES concerning the safe use of Typhoon FLA 9000. See definitions below.

Warnings

WARNING

WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury. It is important not to proceed until all stated conditions are met and clearly understood.

Cautions

CAUTION

CAUTION indicates a hazardous situation which, if not avoided, could result in minor or moderate injury. It is important not to proceed until all stated conditions are met and clearly understood.

Notices

NOTICE

NOTICE indicates instructions that must be followed to avoid damage to the product or other equipment.

Notes and tips

Note: *A Note is used to indicate information that is important for trouble-free and optimal use of the product.*

TIP: A tip contains useful information that can improve or optimize your procedures.

Typographical conventions

Software items are identified in the text by ***bold italic*** text. A colon separates menu levels, thus ***File:Open*** refers to the ***Open*** command in the ***File*** menu. Hardware items are identified in the text by **bold** text (e.g., **Power** switch).

1.2 Regulatory information

This section lists the directives and standards that are fulfilled by the Typhoon FLA 9000 system.

Manufacturing information

Requirements	Content
Name and address of manufacturer	GE Healthcare Bio-Sciences AB, Björkgatan 30, SE 751 84 Uppsala Sweden
Name and ID of notified body	INTERTEK SEMKO AB, NB 0413
Place and date of declaration	Uppsala, Sweden, Sept. 2009
Identity of person authorized to sign Declaration of Conformity	See EC Declaration of Conformity

International standards

This product fulfills the requirements of the following standards:

Standard	Description	Notes
EN 61010-1, IEC 61010-1, UL 61010-1, IEC 61010-2-81, CAN/CSA-C22.2 No. 61010-1	Safety requirements for electrical equipment for measurement, control, and laboratory use	
EN 61326-1 VCCI Class A FCC Part 15 B Class A ICES-003 Class A	EMC emissions and immunity requirements for electrical equipment for measurement, control and laboratory use	Harmonized with 2004/108/EC
EN-ISO 12100-1, 12100-2	Safety of machinery - Basic concepts, general principles for design	Harmonized with 2006/42/EC
EN-ISO 14121-1, 14121-2	Safety of machinery - Principles of risk assessment	Harmonized with 2006/42/EC
EN 60825-1, IEC 60825-1	Safety of laser products	Harmonized with 2006/95/EC
USA 21 CFR, Chapter I, Subchapter J, Part 1040.10 Laser Products	Safety of laser products	

CE Conformity

This product complies with the European directives listed in the table, by fulfilling the corresponding harmonized standards. A copy of the Declaration of Conformity is available on request.

Directive	Title
2006/42/EC	Machinery Directive (MD)

Directive	Title
2006/95/EC	Low Voltage Directive (LVD)
2004/108/EC	ElectroMagnetic Compatibility (EMC) Directive

CE Marking

The CE marking and the corresponding Declaration of Conformity is valid for the instrument when it is:

- used as a stand-alone unit, or
- connected to other CE marked GE Healthcare instruments, or
- connected to other products recommended or described in the user documentation, and
- used in the same state as it was delivered from GE Healthcare, except for alterations described in the user documentation.

Note: *This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.*

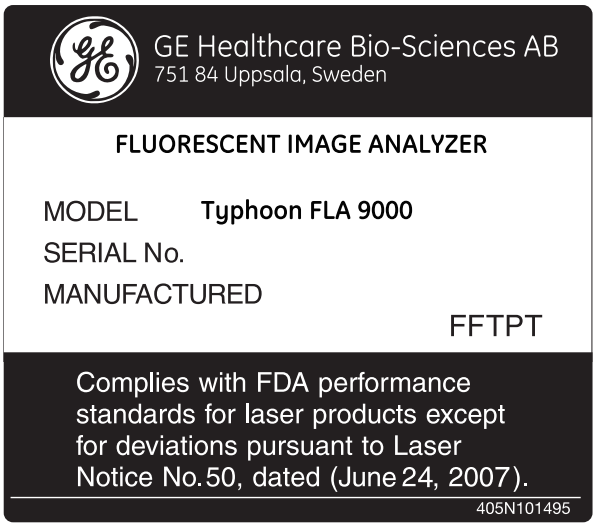
This Class A digital apparatus complies with Canadian ICES-003. Cet appareil numerique de la class A est conforme a la norme NMB-003 du Canada.

Note: *This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.*

Laser standards

This instrument meets the laser radiation safety requirements specified in the Code of the Federal Regulations (21 CFR, Chapter 1, Subchapter J).

This equipment is a class 1 Laser Product (IEC60825-1:2001/EN60825-1:2002).


GE Healthcare Bio-Sciences AB
751 84 Uppsala, Sweden
FLUORESCENT IMAGE ANALYZER
MODEL Typhoon FLA 9000
SERIAL No.
MANUFACTURED
FFTPT
Complies with FDA performance standards for laser products except for deviations pursuant to Laser Notice No.50, dated (June 24, 2007).
405N101495

This instrument conforms to the above-mentioned Code of the Federal Regulations and is designed to be safe against laser radiation. The laser leak level is suppressed to one that does not cause harm to the human body (Class 1) for sufficiently safe operation, provided that the user carries out operation (including user maintenance) of the instrument properly.

Regulatory compliance of connected equipment

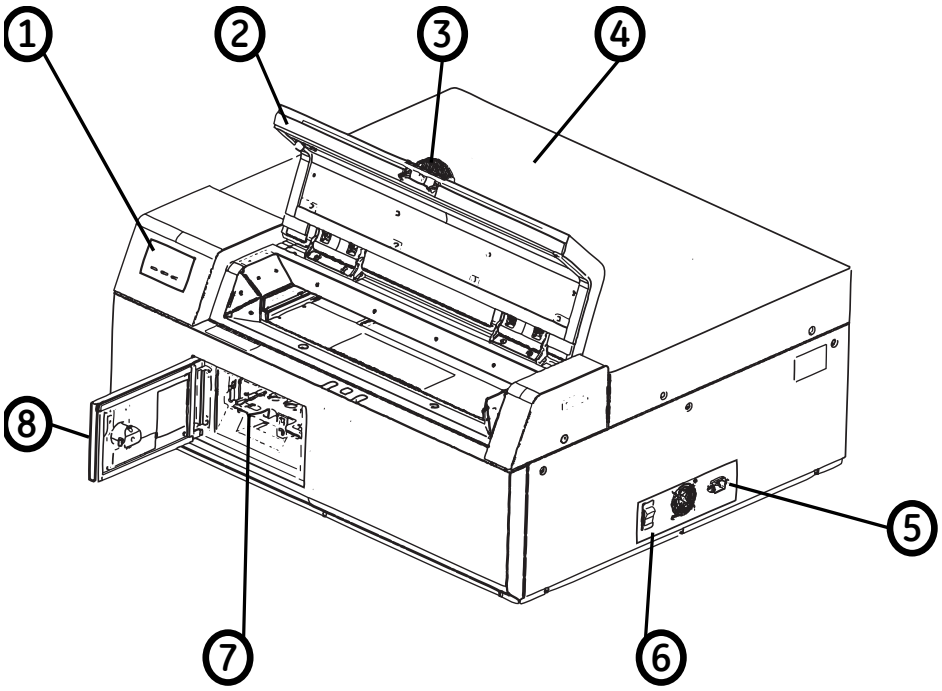
Any equipment connected to the Typhoon FLA 9000 should meet the safety requirements of EN 61010-1/IEC 61010-1, or relevant harmonized standards. Within EU, connected equipment must be CE marked.

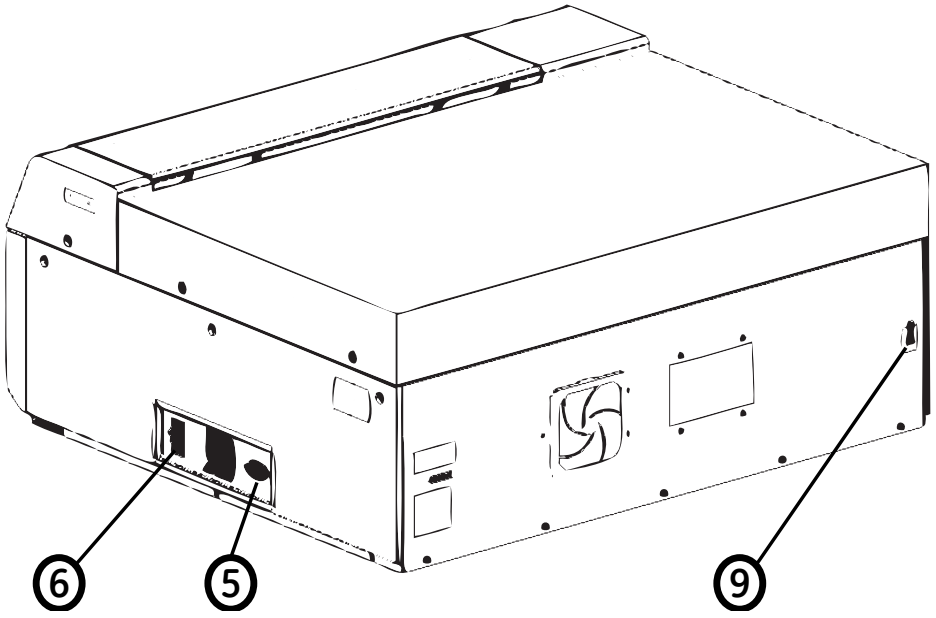
1.3 The Typhoon FLA 9000 laser scanner

Major features

- Imaging of gel, membrane, etc. dyed or labelled with various fluorescent dyes at high sensitivity and high resolution.
- Yielding very high resolution images equivalent to X-ray film.
- Features very high sensitivity, wide dynamic range, reliable linearity, and high resolution.
- Reusable storage phosphor screens.
- High resolution, high sharpness and linearity greatly exceeding film systems.
- System configuration requiring no darkroom or automatic developer.

Parts and functions



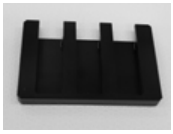
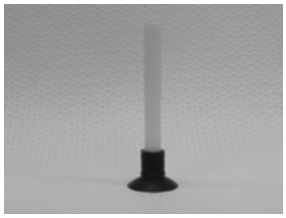
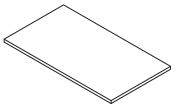
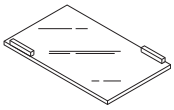


Part	Function
1	Indicator lamps
2	Lid
3	Handle

Part	Function
4	Instrument cover
5	Power cord connector
6	Power switch
7	Filter holder
8	Filter door
9	USB connector

Accessories included

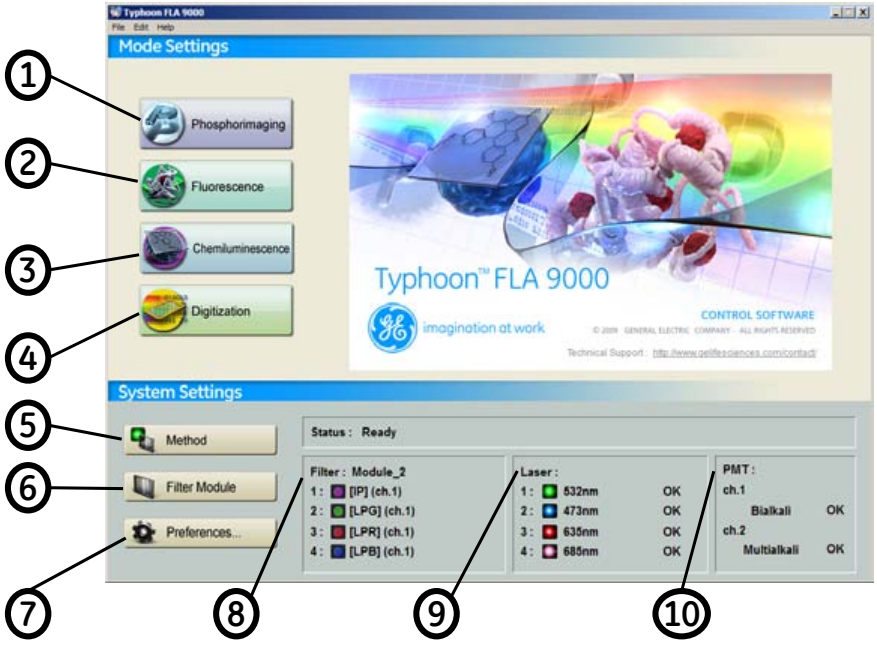
Fluor stage	
Multi stage	
Phosphor stage	
LF glass plate stage	
Titer plate plugin	

Glass slide holder	
Suction rod	
Digitization plate	
Membrane weight	

1.4 Typhoon FLA 9000 Control Software

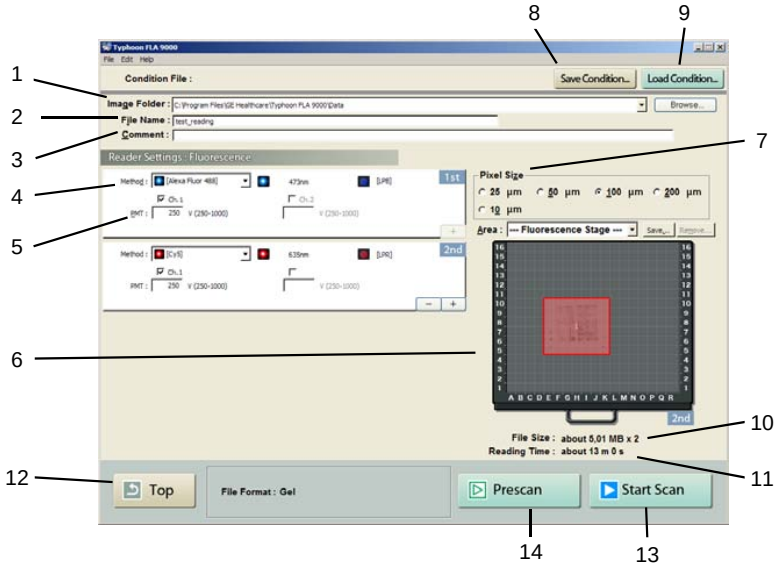
Overview of the main window

The Typhoon FLA 9000 Control Software is used to control, use and supervise the Typhoon FLA 9000.



Part	Function
1	Phosphorimaging button: click to read a storage phosphor screen
2	Fluorescence button: click to read a fluorescent sample
3	Chemiluminescence button: click to read a chemiluminescent sample
4	Digitization button: click to perform digitization
5	Method selection button: click to register or erase a combination of laser and filter
6	Filter module: click to change or register a filter
7	Preferences: click to select file format and correction mode
8	Filter: displays the loaded filters
9	Laser: displays the status of the loaded laser units
10	PMT: displays the status of the loaded photo-multiplier tube

Overview of the reader settings window



Part	Description
1	***Image folder:*** specify where to save the file after the reading.
2	***File Name:*** enter the name of a file to save image data.
3	***Comment:*** enter an optional comment. The comment is embedded in the file where the image is saved, and can be viewed with the analyzing software.

Part	Description
4	***Method:*** set the method to use in the scan. Up to 4 scans can be performed in a row, all with individual methods.
5	***PMT:*** set the voltage of the photo-multiplier tube. The higher the value, the higher the sensitivity. Click to increase the number of scans Click to decrease the number of scans
6	Set the scanning area. 1 Select a method in the drop-down menu. 2 Drag the red square to the desired position of the scanning area. 3 Drag the sides of the red square as needed to adjust the size of the scanning area.
7	***Pixel Size:*** set the pixel size. Choose a **small** pixel size for **high quality** images. Note that a small pixel size setting increases the reading time and the size of the image file.
8	***Save Condition...***: click this button to save the current reading conditions in a file, if desired. For details, refer to the User Manual.
9	***Load Condition...***: click this button to load previously saved reading conditions, if desired. For details, refer to the User Manual.
10	***File Size***: the estimated size of the result data file is presented.
11	***Reading Time***: the estimated time required for the scan is presented.
12	***Top***: return to the main window.
13	***Start Scan***: start the scan. The sample must be loaded before starting a scan.
14	***Prescan***: perform a quick scan at a resolution of 1000 µm.

System requirements

Table 1.1:

Parameter	Minimum requirement
Operating system	Windows™ XP™ Professional SP2 or later *or* Windows Vista™ Business SP 1 or later

Parameter	Minimum requirement
Internal memory	1 GB
Processor	Intel Core 2 Duo processor
Hard drive	80 GB
Monitor resolution	1280 × 1024 pixels
Other requirements	One USB 2.0 port DVD-ROM drive

2 Safety instructions

2.1 Safety precautions

Introduction

The Typhoon FLA 9000 is powered by mains voltage and is used to image samples that may be hazardous. Before installing, operating or maintaining the equipment, you must be aware of the hazards described in the user documentation. Follow the instructions provided to avoid personal injury or damage to the equipment.

General precautions

WARNING

Do not use the equipment if smoke, strange noises or strange odors can be perceived, or if the equipment becomes unusually hot. This may result in fire or electric shock.

Stop using immediately, turn off the power switch and unplug the equipment from the power outlet. Contact your local GE Healthcare representative to request repair.

WARNING

Do not damage the power supply cord by bending, twisting, heating or allowing them to become pinned under the equipment. Using damaged power cords could result in fire or electric shock.

If the power supply cords are damaged, contact your local GE Healthcare representative for replacements.

WARNING

Do not place the equipment on unstable tables or on inclined surfaces, as the equipment could be dropped or fall, resulting in injury.

Laser safety

WARNING

Never detach the inner cover screwed to this instrument. If it is detached, laser beam may leak with a risk of loss of vision.

CAUTION

Using procedures or adjustments other than those specified in this manual may result in hazardous exposure to laser radiation.

Radiation safety

This instrument is not equipped with any radioisotope (RI) or radiation generating unit, and is therefore not regulated by radiation hazard prevention laws. However, the instrument is capable of reading Storage phosphor screens which may be polluted by radioisotopes (RI).

CAUTION

If radioisotope (RI) pollution occurs, stop use of the instrument immediately and follow the instructions of your radiation administrator.

Personal protection

CAUTION

Always wear gloves, protective glasses and a lab coat or similar when handling samples.

CAUTION

Always wear cotton gloves when handling storage phosphor screens.

Installing and moving the instrument

WARNING

The Typhoon FLA 9000 instrument must always be connected to a grounded power outlet.

WARNING

Do not block the ventilation inlets or outlets on the system.

WARNING

HEAVY OBJECT! Use suitable lifting equipment when moving the unit.

WARNING

Power cord. Only use power cords delivered or approved by GE Healthcare.

System operation

WARNING

Do not use the equipment with a power supply other than that recommended. Fire and electric shock could result.

WARNING

Do not use the equipment within or near a sink, or in humid or dusty environments. Fire and electric shock could result.

WARNING

Connect the power supply directly to a grounded wall power outlet. The use of extension cords or multiple loads on one electrical outlet could result in fire and electric shock.

CAUTION

Do not use the same power supply as that of large equipment such as an air conditioner or centrifuge. Malfunction could result.

NOTICE

Avoid exposing storage phosphor screens in places where the environmental radiation may be increased, for example rooms with concrete walls or in basements.

Maintenance

WARNING

Do not attempt to modify the equipment, or fire and electric shock could result.

CAUTION

Take care when connecting the power supply cable. Do not tug on the cable, and do not handle the connection plugs with wet hands.

CAUTION

Connect the computer hardware on the same power circuit, otherwise the equipment may be influenced by electrical nosie.

CAUTION

Turn off the power switch and remove connecting cables before moving the equipment.

CAUTION

Turn the power switch off before cleaning the inside of the equipment.

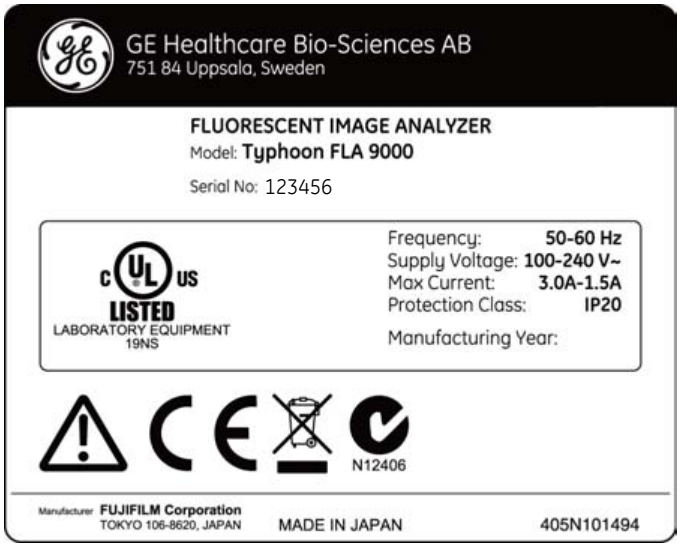
CAUTION

Unplug the equipment if it will not be used for an extended period.

2.2 Labels on Typhoon FLA 9000

Typhoon FLA 9000 serial number

The Typhoon FLA 9000 serial number is located on a label on the back of the instrument.



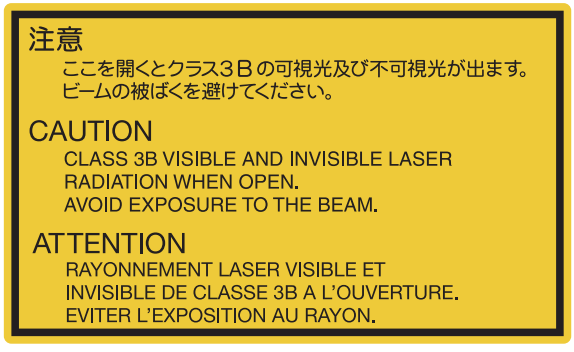
Symbols used in safety labels

Label	Meaning
	Warning! Read the user documentation before using the system. Do not open any covers or replace parts unless specifically stated in the user documentation.
	The system complies with the requirements for electromagnetic compliance (EMC) in Australia and New Zealand.
	The system complies with applicable European directives.

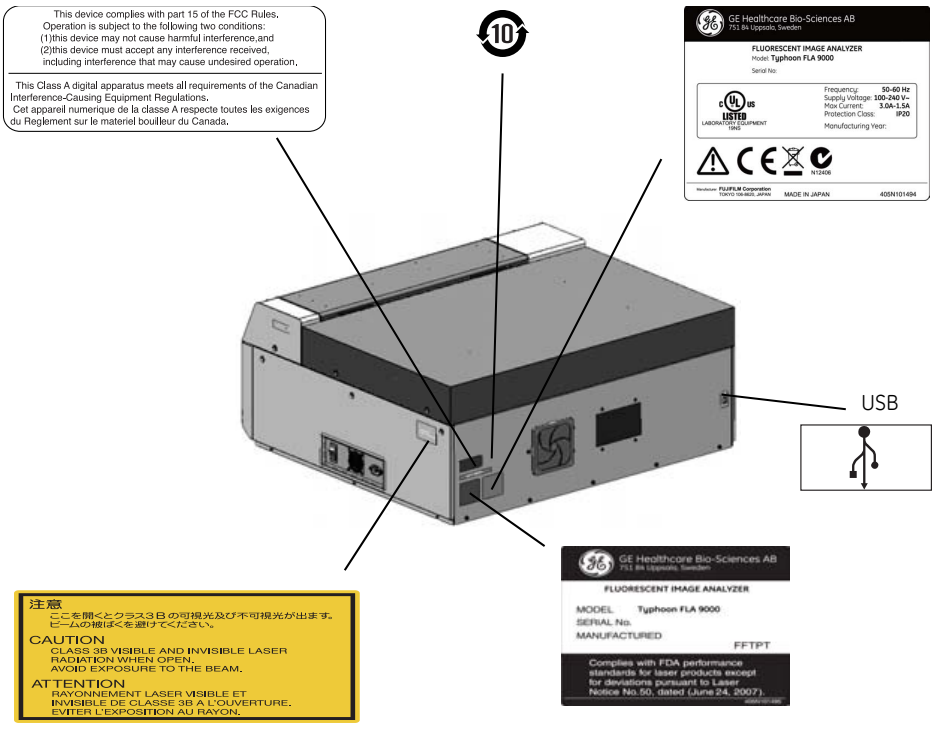
Labels concerning use of hazardous substances

Label	Meaning
	This symbol indicates that the waste of electrical and electronic equipment must not be disposed as unsorted municipal waste and must be collected separately. Please contact an authorized representative of the manufacturer for information concerning the decommissioning of equipment.
	This symbol indicates that the product contains hazardous materials in excess of the limits established by the Chinese standard SJ/T11363-2006 Requirements for Concentration Limits for Certain Hazardous Substances in Electronics.

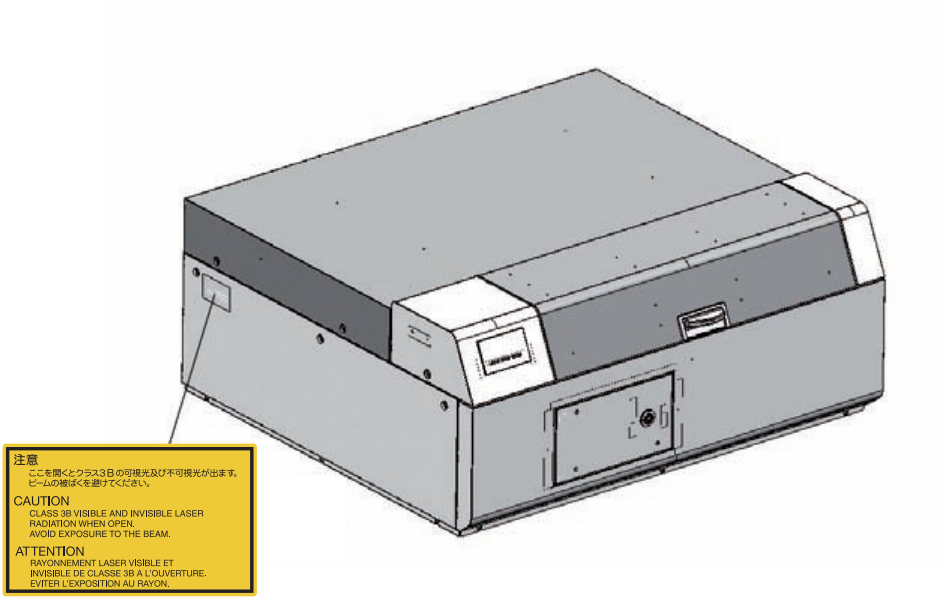
Labels concerning laser light

Label	Meaning
	**CAUTION!** Avoid exposure to the laser beam when the lid is open.
	CAUTION! Class 3B Laser product when open and interlock defeated. Avoid exposure to the beam. Do not attempt to defeat the safety interlocks under the sample lid or behind the filter door, or otherwise try to gain access to the interior of the instrument through any other opening. Exposure to laser light can cause injury. Viewing the laser light directly can cause blindness.

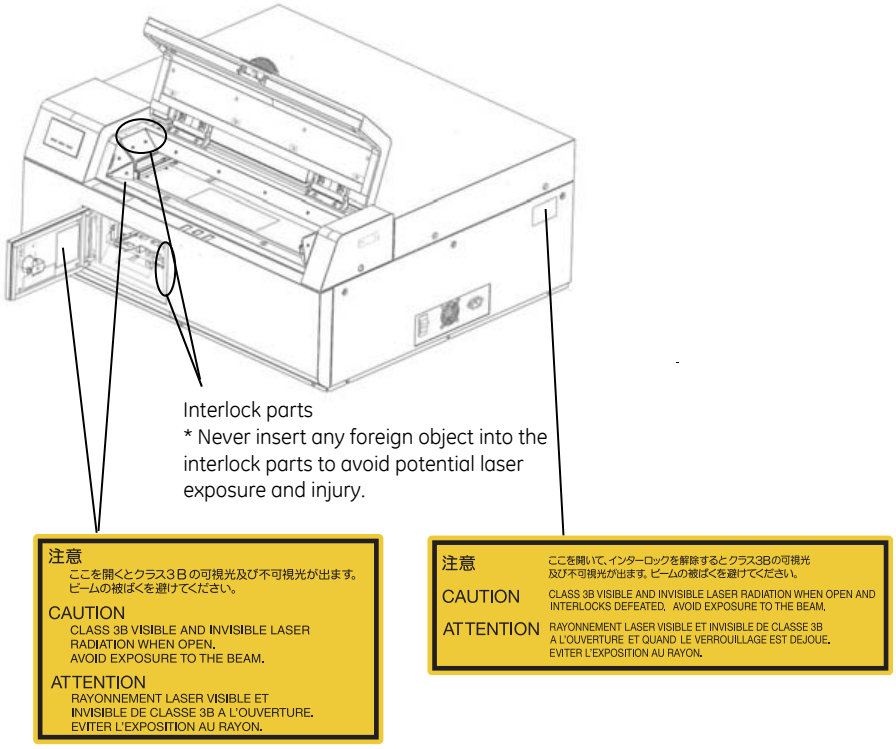
Labels on rear and right side of Typhoon FLA 9000


This device complies with part 15 of the FCC Rules.
Operation is subject to the following two conditions:
(1)this device may not cause harmful interference,and
(2)this device must accept any interference received,
including interference that may cause undesired operation.
This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.
Cet appareil numerique de la classe A respecte toutes les exigences du Reglement sur le materiel bouilleur du Canada.
10
GE Healthcare Bio-Sciences AB
751 84 Uppsala, Sweden
FLUORESCENT IMAGE ANALYZER
Model Typhoon FLA 9000
Serial No:
Frequency: 50-60 Hz
Supply Voltage: 100-240 V~
Max Current: 3.0A-1.5A
Protection Class: IP20
Manufacturing Year:
MADE IN JAPAN
USB
注意
ここを開くとクラス3Bの可視光及び不可視光が出ます。
ビームの被ばくを避けてください。
CAUTION
CLASS 3B VISIBLE AND INVISIBLE LASER RADIATION WHEN OPEN.
AVOID EXPOSURE TO THE BEAM.
ATTENTION
RAYONNEMENT LASER VISIBLE ET INVISIBLE DE CLASSE 3B A L'OUVERTURE.
EVITER L'EXPOSITION AU RAYON.
GE Healthcare Bio-Sciences AB
751 84 Uppsala, Sweden
FLUORESCENT IMAGE ANALYZER
MODEL Typhoon FLA 9000
SERIAL No.
MANUFACTURED
FFTPT
Complies with FDA performance standards for laser products except for deviations pursuant to Laser Notice No.50, dated (June 24, 2007).

Labels on left side of Typhoon FLA 9000



Labels inside the Typhoon FLA 9000


Interlock parts
* Never insert any foreign object into the interlock parts to avoid potential laser exposure and injury.
注意
ここを開くとクラス３Ｂの可視光及び不可視光が出ます。
ビームの被ばくを避けてください。
CAUTION
CLASS 3B VISIBLE AND INVISIBLE LASER RADIATION WHEN OPEN.
AVOID EXPOSURE TO THE BEAM.
ATTENTION
RAYONNEMENT LASER VISIBLE ET INVISIBLE DE CLASSE 3B A L'OUVERTURE.
EVITER L'EXPOSITION AU RAYON.
注意
ここを開いて、インターロックを解除するとクラス3Bの可視光及び不可視光が出ます。ビームの被ばくを避けてください。
CAUTION
CLASS 3B VISIBLE AND INVISIBLE LASER RADIATION WHEN OPEN AND INTERLOCKS DEFEATED. AVOID EXPOSURE TO THE BEAM.
ATTENTION
RAYONNEMENT LASER VISIBLE ET INVISIBLE DE CLASSE 3B A L'OUVERTURE ET QUAND LE VERROUILLAGE EST DEJOUE. EVITER L'EXPOSITION AU RAYON.

2.3 Emergency procedure

This section describes how to do an emergency shutdown of the Typhoon FLA 9000 instrument. The section also describes the results of a power failure.

Emergency shutdown

Step	Action
1	Click the ***Stop*** button in the Typhoon FLA 9000 Control Software.
2	Turn off the Typhoon FLA 9000 by pressing the power switch on the right side of the instrument body.
3	Disconnect the power cord from the power outlet.

Power failure

The results of a power failure depends on the unit or units affected.

Unit affected by power failure	Results
Typhoon FLA 9000 instrument	• The reading is interrupted immediately. The instrument is in an undefined state. • The data collected up to the time of the power failure is available in the file created when starting the scan.
Computer running the Typhoon FLA 9000 Control Software	• The computer shuts down immediately. • The run continues, but no data is saved.

2.4 Recycling information

General instructions for disposal

When taking the Typhoon FLA 9000 out of service, the different materials must be separated and recycled according to national and local environmental regulations.

Specific instructions for disposal

Measure the superficial radio isotope pollution of the instrument body and storage phosphor screen as mentioned in the radiation hazard prevention section of the User Manual.

If the pollution level exceeds the limit, dispose of the instrument body as radioactive waste. Otherwise, dispose of the materials according to applicable laws and regulations for disposal of industrial waste.

3 Installation

3.1 Site requirements

Note: *The Typhoon FLA 9000 is intended for indoor use only.*

Parameter	Requirement
Power supply	100 to 240 V AC, 3.0 to 1.5 A
Line frequency	50 to 60 Hz
Placement	Stable, horizontal surface out of direct sunlight
Ambient temperature	+10 to +30°C
Humidity	30 to 70%, non-condensing
Maximum altitude	2000 m above sea level

3.2 Transporting the Typhoon FLA 9000

The Typhoon FLA 9000 weighs approximately 97 kg and requires at least two persons to lift and move.

Precautions before moving the instrument

Step	Action
1	Turn off the Typhoon FLA 9000.
2	Turn off the computer and any peripheral devices.
3	Disconnect the power cords and the USB connection.

3.3 Unpacking the Typhoon FLA 9000

- Check the equipment for any apparent damage before starting installation.
- Document any damage carefully and contact your GE Healthcare representative.

3.4 Connections

Communication

Step	Action
1	Connect a USB cable to the USB port on the rear side of the Typhoon FLA 9000.
2	Connect the other end of the USB cable to a USB port on the computer.

CAUTION

- Do not connect any USB devices other than the Typhoon FLA 9000 to the computer in which the Typhoon FLA 9000 Control Software is installed.
- Use only the Typhoon FLA 9000 Control Software during reading.

Electrical power

Connect the power cord of the Typhoon FLA 9000 to a grounded power outlet.

WARNING

Use only power cords delivered or approved by GE Healthcare.

3.5 Software installation

Installation sequence

Software installation is performed in the following sequence

1 Install the USB control driver

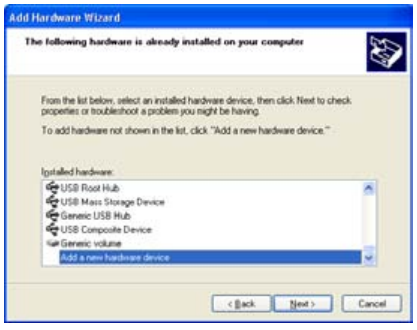
2 Install the USB function driver

3 Install the Typhoon FLA 9000 Control Software

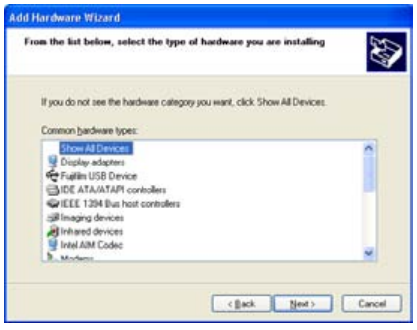
3.5.1 Install Typhoon FLA 9000 Control Software under Windows XP

Install the USB Control Driver (Windows XP)

Step	Action
1	Disconnect Typhoon FLA 9000 from the computer.
2	Open the control panel and select ***Printers and Other Hardware***.
3	Click ***Add Hardware***.
4	Click the ***Next*** button in the ***Add hardware wizard***.
5	Select ***Yes, I have already connected the hardware*** and click the ***Next*** button.
6	Select ***Add a new hardware device*** and click the ***Next*** button.

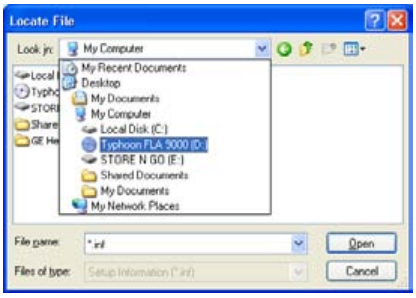

Add Hardware Wizard
The following hardware is already installed on your computer
From the list below, select an installed hardware device, then click Next to check properties or troubleshoot a problem you might be having.
To add hardware not shown in the list, click "Add a new hardware device."
Installed hardware:
USB Root Hub
USB Mass Storage Device
Generic USB Hub
USB Composite Device
Generic volume
Add a new hardware device
< Back
Next >
Cancel

7	Select ***Install the hardware that I manually select from a list [Advanced]*** and click the ***Next*** button.
8	Select ***Show All Devices*** and click the ***Next*** button.

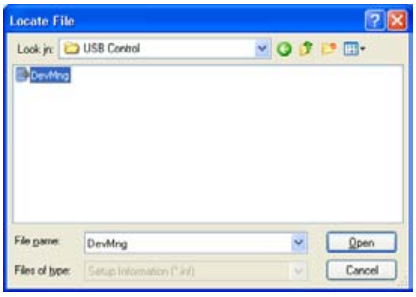

Add Hardware Wizard
From the list below, select the type of hardware you are installing
If you do not see the hardware category you want, click Show All Devices.
Common hardware types:
Show All Devices
Display adapters
Fujitsu USB Device
IDE ATA/ATAPI controllers
IEEE 1394 Bus host controllers
Imaging devices
Infrared devices
Intel AIM Codec
< Back
Next >
Cancel

9	Click the ***Have Disk*** button.
10	Insert the Typhoon FLA 9000 Control Software CD and click the ***Browse*** button.

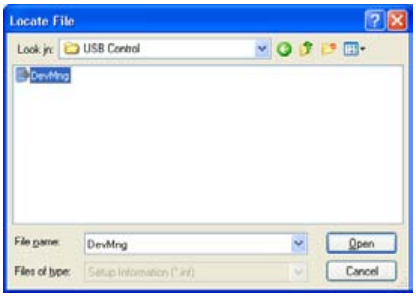
Step	Action
11	Select to install the driver from the Typhoon FLA 9000 Control Software CD.



12	Open the ***USB Control*** folder.



13	Select the ***DevMng.inf*** file and click the ***Open*** button.



14	Click the ***OK*** button in the ***Install from disk*** dialog.
15	Click the ***Next*** button in the ***Add hardware wizard***.
16	Click the ***Next*** button again.

Step	Action
17	Click the ***Continue Anyway*** button.

Hardware Installation
The software you are installing for this hardware:
Fujifilm USB Device Managment Driver
has not passed Windows Logo testing to verify its compatibility with Windows XP. (Tell me why this testing is important.)
Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the hardware vendor for software that has passed Windows Logo testing.
Continue Anyway
STOP Installation

18	Click the ***Finish*** button to complete the driver installation.

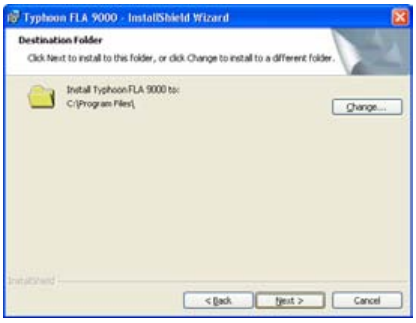
Install the USB function driver (Windows XP)

Step	Action
1	Connect the computer and the Typhoon FLA 9000 with a USB cable and turn **ON** the power switch of Typhoon FLA 9000. The scanner is automatically detected by the computer.
2	In the ***Found New Hardware Wizard*** dialog, choose ***No, not this time*** and click the ***Next*** button.

Found New Hardware Wizard
Welcome to the Found New Hardware Wizard
Windows will search for current and updated software by looking on your computer, on the hardware installation CD, or on the Windows Update Web site (with your permission).
Read our privacy policy
Can Windows connect to Windows Update to search for software?
Yes, this time only
Yes, now and every time I connect a device
No, not this time
Click Next to continue.
Next >
Cancel

3	Insert the installation CD, select ***Install the software automatically (Recommended)*** and click the ***Next*** button.
4	Click the ***Finish*** button to complete the installation.

Install Typhoon FLA 9000 Control Software (Windows XP)

Step	Action
1	Insert the Typhoon FLA 9000 Control Software CD.
2	Locate and double-click the file Typhoon FLA 9000.msi.
3	In the ***Typhoon FLA 9000 - InstallShield Wizard***, click the ***Next*** button.
4	Read the license text. If the license agreement is not acceptable please contact a GE Healthcare representative, see back cover of this manual for contact information. Select ***I accept the terms in the license agreement*** and click the ***Next*** button.
5	Select destination folder in the dialog:  • Click the ***Next*** button to install the software at the default folder ***C:\Program Files***. • Click the ***Change*** button to install to a different folder.
6	Click the ***Install*** button.
7	Click the ***Finish*** button so complete the installation of Typhoon FLA 9000 Control Software.

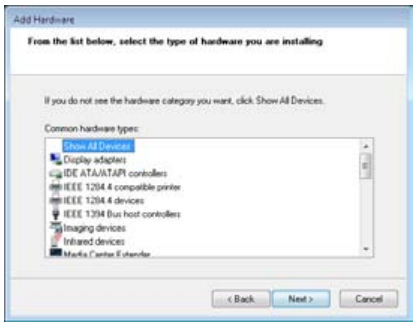
3.5.2 Install Typhoon FLA 9000 Control Software under Windows Vista

Install the USB Control Driver (Windows Vista)

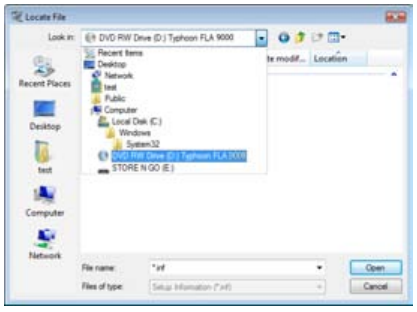
Note: *During software installations, you may be asked to confirm your actions in a dialog with the text* ***Windows needs your permission to continue****. Enter an administrator password, if prompted, then click* ***Continue*** *to proceed with the installation.*

Step	Action
1	Disconnect Typhoon FLA 9000 Control Software from the computer.
2	Open the control panel and click ***Classic View*** in the upper left corner.
3	Open ***Add Hardware***.

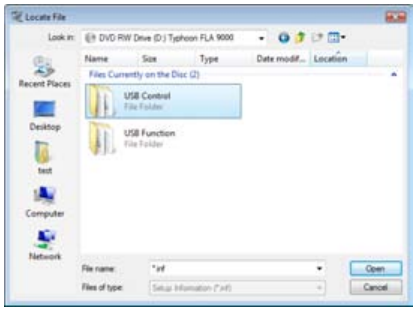
Step	Action
4	In the ***Add Hardware*** dialog, click the ***Next*** button.
5	Select ***Install the hardware that I manually select from a list (Advanced)*** and click the ***Next*** button.
6	Select ***Show All Devices*** and click the ***Next*** button.


Add Hardware
From the list below, select the type of hardware you are installing
If you do not see the hardware category you want, click Show All Devices.
Common hardware types:
Show All Devices
Display adapters
IDE ATA/ATAPI controllers
IEEE 1284.4 compatible printer
IEEE 1284.4 devices
IEEE 1394 Bus host controllers
Imaging devices
Infrared devices
< Back
Next >
Cancel

7	Click the ***Have Disk*** button.
8	Insert the Typhoon FLA 9000 Control Software CD and click the ***Browse*** button.
9	Select to install the driver from the Typhoon FLA 9000 Control Software CD.



10	Open the ***USB Control*** folder.



Step	Action
11	Select the file ***DevMng*** and click the ***Open*** button.
12	Click the ***OK*** button in the dialog ***Install from disk***.
13	Click the ***Next*** button in the wizard ***Add hardware***.
14	Click the ***Next*** button once again.
15	Click ***Install this driver software anyway***.
16	Click the ***Finish*** button to complete the installation.

Install the USB function driver (Windows Vista)

Note: *During software installations, you may be asked to confirm your actions in a dialog with the text* ***Windows needs your permission to continue****. Enter an administrator password, if prompted, then click* ***Continue*** *to proceed with the installation.*

Step	Action
1	Connect the computer and the Typhoon FLA 9000 with a USB cable and turn **ON** the power switch of Typhoon FLA 9000. *Result:* The scanner will automatically be detected by the computer and the Plug and Play function in Windows Vista starts.
2	In the ***Found New Hardware*** dialog, select ***Locate and install driver software (recommended)***.
3	Insert the Typhoon FLA 9000 Control Software CD and click the ***Next*** button in the ***Found New Hardware*** dialog.

Step	Action
4	Select ***Install this driver software anyway***.

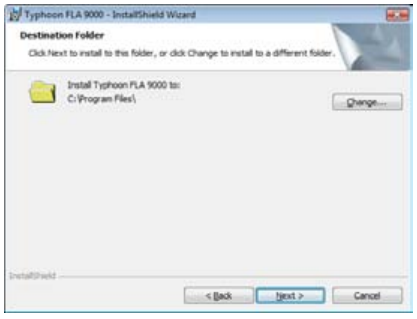
Windows Security
Windows can't verify the publisher of this driver software
Don't install this driver software
You should check your manufacturer's website for updated driver software for your device.
Install this driver software anyway
Only install driver software obtained from your manufacturer's website or disc. Unsigned software from other sources may harm your computer or steal information.
See details

5	A successful installation message appears. Click the ***Close*** button.

Install Typhoon FLA 9000 Control Software (Windows Vista)

Note: *During software installations, you may be asked to confirm your actions in a dialog with the text* ***Windows needs your permission to continue****. Enter an administrator password, if prompted, then click* ***Continue*** *to proceed with the installation.*

Step	Action
1	Insert the Typhoon FLA 9000 Control Software CD.
2	Locate and double-click the file Typhoon FLA 9000.msi.
3	In the ***Typhoon FLA 9000 - InstallShield Wizard*** dialog, click the ***Next*** button.
4	Read the license text. If the license agreement is not acceptable, please contact a GE Healthcare representative. See the back cover of this manual for contact information. Select ***I accept the terms in the license agreement*** and click the ***Next*** button.
5	Select destination folder in the dialog:


Typhoon FLA 9000 - InstallShield Wizard
Destination Folder
Click Next to install to this folder, or click Change to install to a different folder.
Install Typhoon FLA 9000 to:
C:\Program Files\
Change...
< Back
Next >
Cancel

- Click the ***Next*** button to install the software at the default folder ***C:\Program Files***.
- Click the ***Change*** button to install to a different folder.

6	Click the ***Install*** button.

Step	Action
7	If User Account Control (UAC) is enabled in Windows Vista, a dialog displays the message ***An unidentified program wants access to your computer***. Click ***Allow***.
8	Click the ***Finish*** button. The installation of Typhoon FLA 9000 Control Software is now completed.

3.6 Preparations before starting Typhoon FLA 9000

Checklist before starting Typhoon FLA 9000

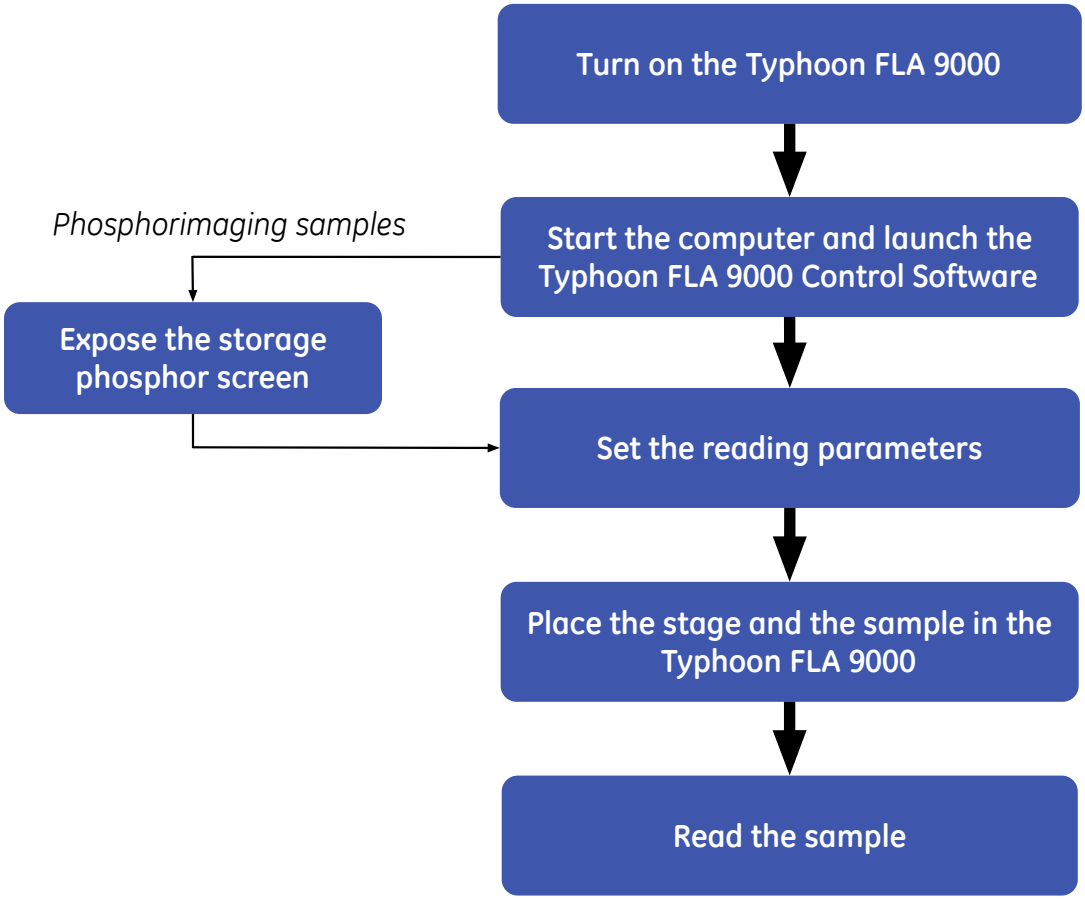
- Typhoon FLA 9000 is placed on a sturdy, horizontal surface.
- Typhoon FLA 9000 is connected to a grounded wall outlet.
- The air intake fan on the rear side of Typhoon FLA 9000 is unobstructed.
- The air exhaust fan on the left side of Typhoon FLA 9000 is unobstructed.
- There are no objects on top of Typhoon FLA 9000.

Note: *Before turning on the instrument, open the lid and make sure that the stage rack is empty. Then, close the lid securely.*

4 Operation

4.1 Operation overview

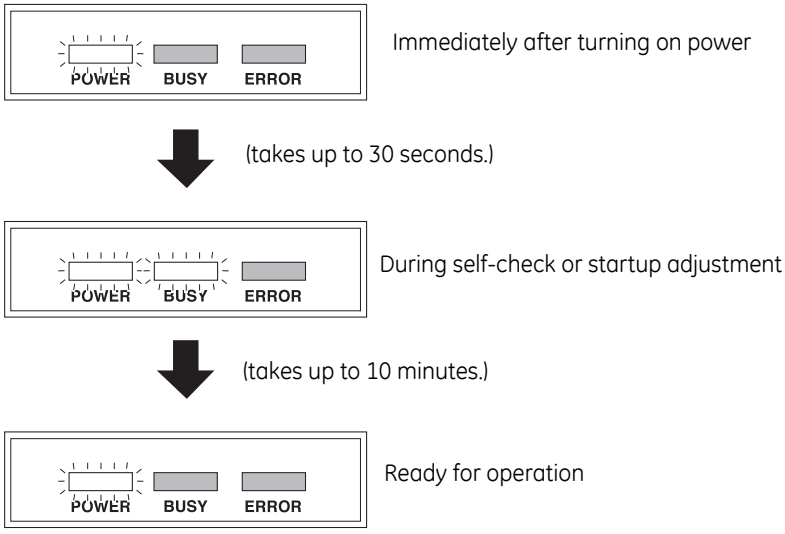
Using Typhoon FLA 9000 comprises a series of steps outlined below. Detailed explanations are provided in subsequent chapters.


Turn on the Typhoon FLA 9000
Start the computer and launch the Typhoon FLA 9000 Control Software
Set the reading parameters
Place the stage and the sample in the Typhoon FLA 9000
Read the sample
Phosphorimaging samples
Expose the storage phosphor screen

4.2 Starting the instrument and the Typhoon FLA 9000 Control Software

Note: *Before turning on the instrument, open the lid and make sure that the stage rack is empty. Then, close the lid securely.*

Step	Action
1	Push the power switch on the right side of the instrument to the "I" position.
2	When the instrument is turned on, the On/Off conditions of the indicator lamps change as shown below.



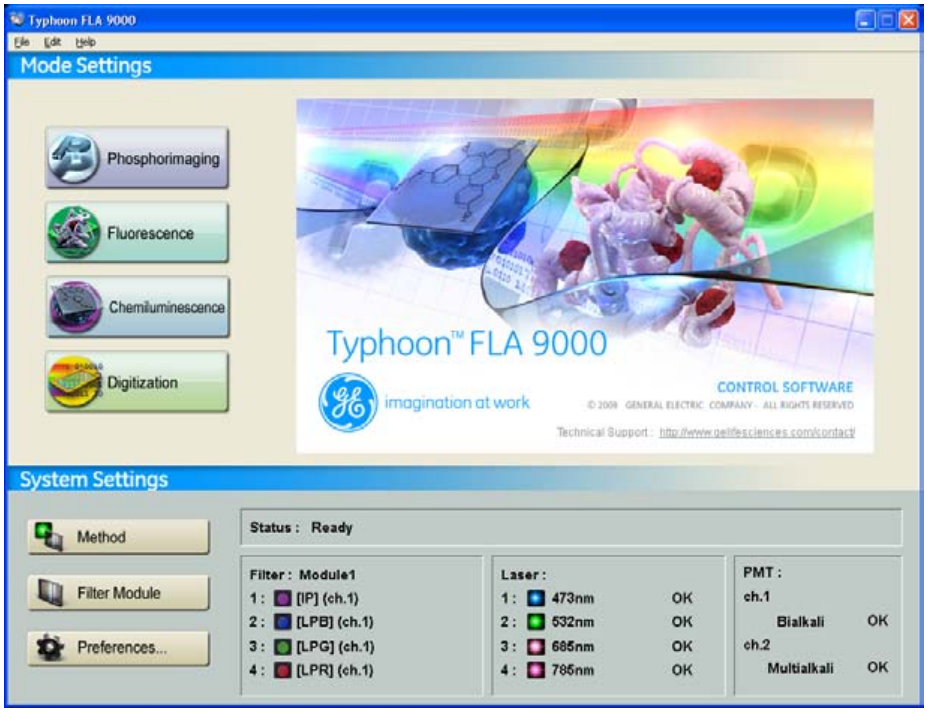
Starting the Typhoon FLA 9000 Control Software

CAUTION

Do not insert a Storage phosphor screen in Typhoon FLA 9000 before turning on the machine. If an imaging plate is detected during the self-diagnosis of the Typhoon FLA 9000, the sensitivity of the Storage phosphor screen may deteriorate. The scanned data can then not be guaranteed.

Step	Action
1	Turn on Typhoon FLA 9000.
2	Turn on the computer.
3	Make sure that Typhoon FLA 9000 has completed the warm-up, , after which only the power lamp on the upper left panel on the front of the Typhoon FLA 9000 is lit.
4	Start Typhoon FLA 9000 Control Software from the ***Start*** menu, or use the desktop shortcut.

Step	Action
5	The main window of the Typhoon FLA 9000 Control Software is displayed.



The condition is displayed in the Status area of the main window. Status messages are as follows:

Message	Explanation
Disconnected	Cannot recognize Typhoon FLA 9000. Please check connection and power.
Warm-up	Typhoon FLA 9000 is in self-diagnosis. Please wait.
Ready	The unit is ready to use.

5 Reading fluorescent samples

5.1 Set the reading mode and reading conditions

Start the system

1 Turn on Typhoon FLA 9000 and the computer.

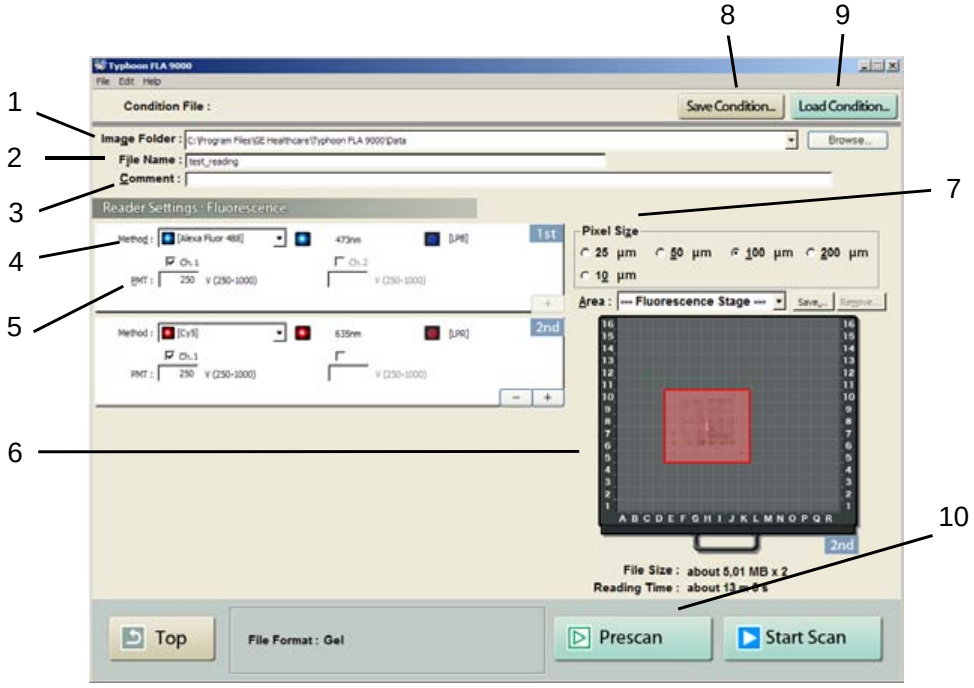
2 Start the Typhoon FLA 9000 Control Software.

Set the reading conditions

Click the ***Fluorescence*** button in the main window to reach the Reader Settings window for the fluorescence mode .

Perform the tasks specified in the numbered table below.

Note: *All parts in the window are described in Section 1.4 Typhoon FLA 9000 Control Software, on page 12.*



Part	Description
1	***Image folder:*** specify where to save the file after the reading.
2	***File Name:*** enter the name of a file to save image data.
3	***Comment:*** enter an optional comment. The comment is embedded in the file where the image is saved, and can be viewed with the analyzing software.
4	***Method:*** set the method to use in the scan. Up to 4 scans can be performed in a row, all with individual methods.
5	***PMT:*** set the voltage of the photo-multiplier tube. The higher the value, the higher the sensitivity. Click to increase the number of scans Click to decrease the number of scans
6	Set the scanning area. 1 Select a method in the drop-down menu. 2 Drag the red square to the desired position of the scanning area. 3 Drag the sides of the red square as needed to adjust the size of the scanning area.
7	***Pixel Size:*** set the pixel size. Choose a **small** pixel size for **high quality** images. Note that a small pixel size setting increases the reading time and the size of the image file.
8	***Save Condition...***: click this button to save the current reading conditions in a file, if desired. For details, refer to the User Manual.
9	***Load Condition...***: click this button to load previously saved reading conditions, if desired. For details, refer to the User Manual.
10	***Prescan***: Click to quickly prescan the sample at a resolution of 1000 µm.

5.2 Place the sample on the stage

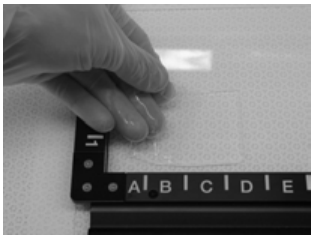
CAUTION

Always wear gloves, protective glasses and a lab coat or similar when handling samples.

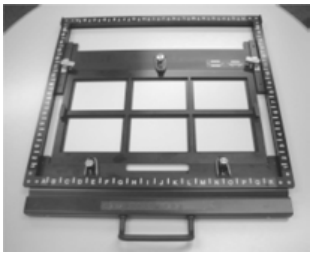
Placing a gel sample on the Fluor stage

Note:

- *The sample must not be thicker than 30 mm. For solutions, the maximum height is 4 mm.*
- *Make sure there are no bubbles or gaps on the contact surface.*

Step	Action
1	Place the sample on the Fluor stage. 
2	Place the fluorescent plate for digitization on top of the sample.

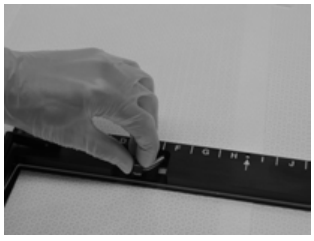
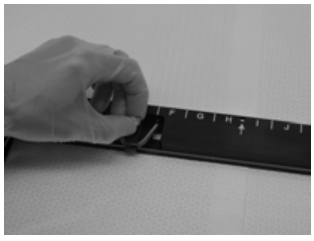
Placing a titer plate on the Multi stage

Step	Action
1	Place the titer plate frame on the Multi stage. 
2	Place the titer plate in the desired position in the titer plate frame.

Placing a DIGE gel on the LF glass plate stage

Step	Action
1	Place one or two DIGE gels on the LF glass plate stage.
2	Fasten each glass with the front and rear glass holders.
3	Press down each glass holder and tighten the screw.

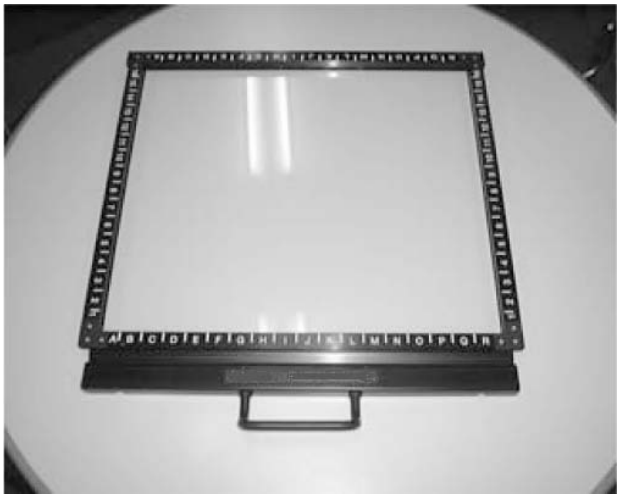
Placing a gel sample with glass on the Multi stage

Step	Action
1	Place a gel sample with glass on the Multi stage.
2	Carefully fold down the spring-loaded glass holders on the glass. 
3	Tighten the screws on the glass holders as necessary. 

5.3 Place the stage in Typhoon FLA 9000

Placing the Fluor or Multi stage in the Typhoon FLA 9000

Step	Action
1	Open the lid of the Typhoon FLA 9000.
2	Place the stage on the Typhoon FLA 9000 with the printed side of the frame facing up.



Step	Action
3	Press the stage all the way in.

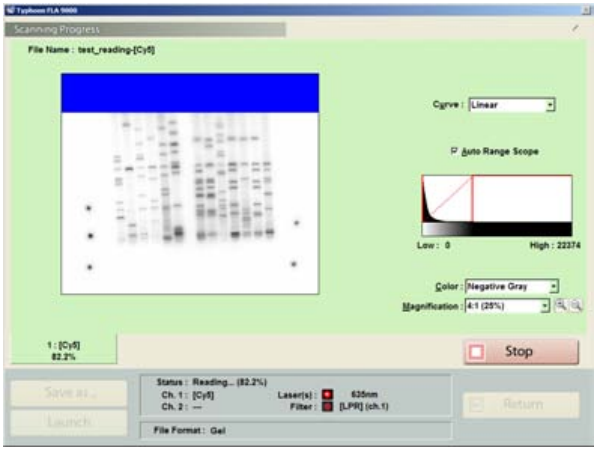
Step	Action
4	Close the lid.

Placing the LF glass plate stage in the Typhoon FLA 9000

Step	Action
1	Open the lid of the Typhoon FLA 9000.
2	Place the LF glass plate stage in the scanner.
3	Push the LF glass plate stage in until it stops.
4	Close the lid.

5.4 Read the sample

Click the ***Start Scan*** button to start reading.



Note: *If you click the **Stop** button during reading, the part that has not been read yet will be saved as an image with a data value of 0 (light intensity of 0).*

Note: *When you click the **Stop** button, the reading is aborted. You cannot start reading again from the location where reading stopped.*

Adjust the display parameters

<table>
<tr><th>Parameter</th><th>Explanation</th></tr>
<tr><td>Curve</td><td>Adjust the gradations in the image.

Exponential Exponential gradation adjustment
Linear Linear gradation adjustment
Sigmoid Sigmoid gradation adjustment</td></tr>
<tr><td>Magnification</td><td>Zoom in or out.</td></tr>
<tr><td>Auto range scope</td><td>Check this option to optimize the tones automatically.</td></tr>
<tr><td>Color</td><td>Select the colors used to display the data.

<table>
<tr><th>Value</th><th>Color of low values</th><th>Color of high values</th></tr>
<tr><td>Negative Gray</td><td>White</td><td>Black</td></tr>
<tr><td>Positive Gray</td><td>Black</td><td>White</td></tr>
<tr><td>Red</td><td>Black</td><td>Red</td></tr>
<tr><td>Green</td><td>Black</td><td>Green</td></tr>
<tr><td>Blue</td><td>Black</td><td>Blue</td></tr>
<tr><td>Color32</td><td>Blue</td><td>Red</td></tr>
</table>
</td></tr>
</table>

6 Reading chemiluminescent samples

6.1 Set the reading mode and reading conditions

Start the system

1 Turn on Typhoon FLA 9000 and the computer.

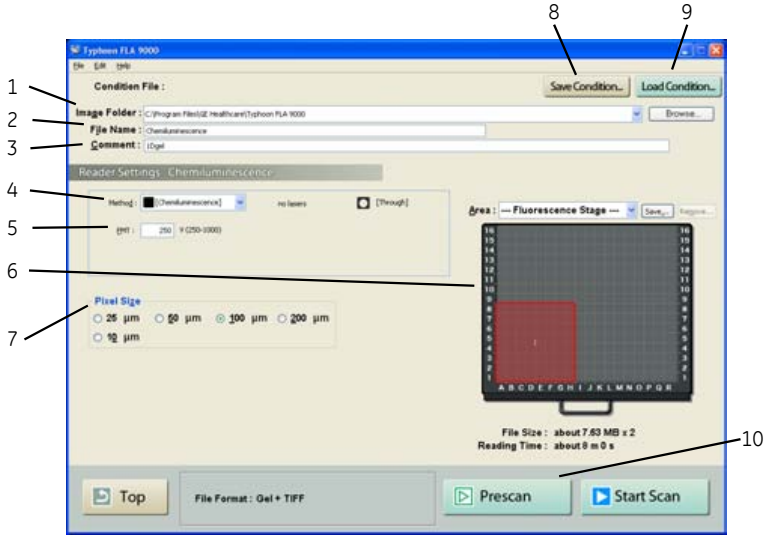
2 Start the Typhoon FLA 9000 Control Software.

Set the reading conditions

Click the ***Chemiluminescence*** button to reach the ***Reader settings*** window for the chemiluminescence mode.

Perform the tasks specified in the numbered table below.

Note: *All parts in the window are described in Section 1.4 Typhoon FLA 9000 Control Software, on page 12.*



Part	Description
1	***Image folder:*** specify where to save the file after the reading.
2	***File Name:*** enter the name of a file to save image data.

Part	Description
3	***Comment:*** enter an optional comment. The comment is embedded in the file where the image is saved, and can be viewed with the analyzing software.
4	***Method:*** set the method to use in the scan. No laser or filter is used in the chemiluminescence mode.
5	***PMT:*** set the voltage of the photo-multiplier tube. The higher the value, the higher the sensitivity.
6	Set the scanning area. 1 Select a method in the drop-down menu. 2 Drag the red square to the desired position of the scanning area. 3 Drag the sides of the red square as needed to adjust the size of the scanning area.
7	***Pixel Size:*** set the pixel size. Choose a **small** pixel size for **high quality** images. Note that a small pixel size setting increases the reading time and the size of the image file.
8	***Save Condition...***: click this button to save the current reading conditions in a file, if desired. For details, refer to the User Manual.
9	***Load Condition...***: click this button to load previously saved reading conditions, if desired. For details, refer to the User Manual.
10	***Prescan***: Click to quickly prescan the sample at a resolution of 1000 µm.

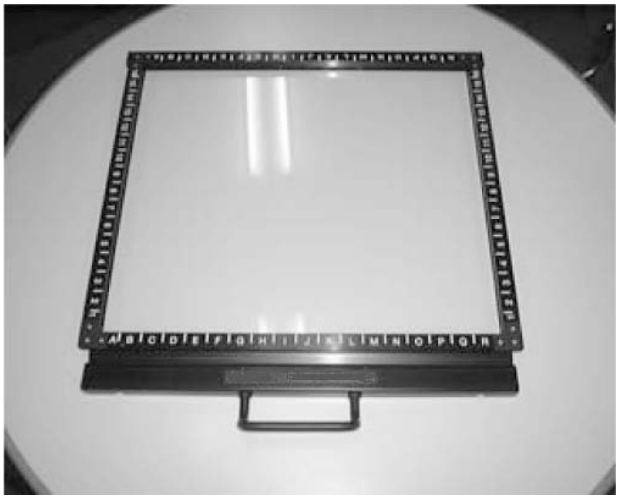
6.2 Place the sample on the stage

Place the sample on the Fluor stage with the chemiluminescent side face down.

Note: *Tape the corners of **membrane samples** to the stage. This reduces the effect of physical vibrations.*

6.3 Place the stage in the Typhoon FLA 9000

Step	Action
1	Open the lid of the Typhoon FLA 9000.
2	Place the stage on the Typhoon FLA 9000 with the printed side of the frame facing up.

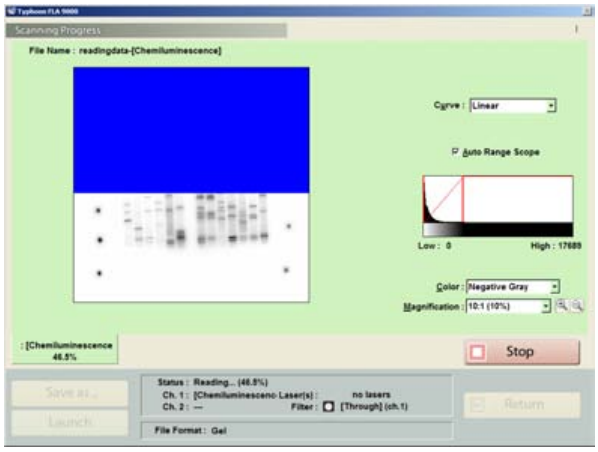


3	Press the stage all the way in.

4	Close the lid.

6.4 Read the sample

Click the ***Start Scan*** button to start reading.



Note: *If you click the **Stop** button during reading, the part that has not been read yet will be saved as an image with a data value of 0 (light intensity of 0).*

Note: *When you click the **Stop** button, the reading is aborted. You cannot start reading again from the location where reading stopped.*

Adjust the display parameters

Parameter	Explanation
Curve	Adjust the gradations in the image. ***Exponential*** Exponential gradation adjustment ***Linear*** Linear gradation adjustment ***Sigmoid*** Sigmoid gradation adjustment
Magnification	Zoom in or out.
Auto range scope	Check this option to optimize the tones automatically.

<table>
<tr><th>Parameter</th><th>Explanation</th></tr>
<tr><td>Color</td><td>Select the colors used to display the data.

<table>
<tr><th>Value</th><th>Color of low values</th><th>Color of high values</th></tr>
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<tr><td>Positive Gray</td><td>Black</td><td>White</td></tr>
<tr><td>Red</td><td>Black</td><td>Red</td></tr>
<tr><td>Green</td><td>Black</td><td>Green</td></tr>
<tr><td>Blue</td><td>Black</td><td>Blue</td></tr>
<tr><td>Color32</td><td>Blue</td><td>Red</td></tr>
</table>
</td></tr>
</table>

7 Exposing storage phosphor screens

7.1 Handling precautions

Check the exposure environment

NOTICE

Avoid exposing storage phosphor screens in places where the environmental radiation may be increased, for example rooms with concrete walls or in basements.

Do not stack cassettes during exposure.

Wear gloves

CAUTION

Always wear cotton gloves when handling storage phosphor screens.

Use a suction rod when taking the storage phosphor screen out of the cassette. Prying the storage phosphor out may result in the edge peeling off, making the storage phosphor screen unusable.

Handle the storage phosphor screen carefully

- Do not scratch or bend the storage phosphor screen.
- Keep the storage phosphor screen free from dust.

Protect the storage phosphor screen from water and volatile solvents

- Dry the sample thoroughly before exposing it.
- Wrap wet samples in plastic film and make sure that no liquid exits. Use double layers if the sample contains volatile solvents.
- If water enters the Storage phosphor screen, the sensitivity of the storage phosphor screen is reduced.
- Volatile solvents may deform the protective film on the storage phosphor screen.

Protect exposed storage phosphor screens from light

Protect exposed storage phosphor screens from light until the reading is finished.

Store the storage phosphor screen correctly

Remove the storage phosphor screen from the Typhoon FLA 9000 main unit when not in use. Store the storage phosphor screens in a horizontal position, protected from moisture.

7.2 Preparing the storage phosphor screen

Procure necessary tools and items

Necessary items
Storage phosphor screen cassette
Radio isotope labeled samples
Gloves
Plastic film
Soft lint-free tissues
Ethanol

Clean the storage phosphor screen and the cassette

Clean the surface of the storage phosphor screen and the inside of cassette with a soft tissue to remove dust and stains.

Erase the storage phosphor screen

The FLA Image Eraser can erase the storage phosphor screen in around 15 minutes, if it is not overly exposed. For details, refer to the *FLA Image Eraser User Manual*.

Dim the lighting

- Dim the ambient light to 20 lux or less before opening or moving the storage phosphor screen without a cover.

- Protect the phosphor stage with the protective cover when removing an exposed storage phosphor screen from the cassette and placing it on the Phosphor stage.

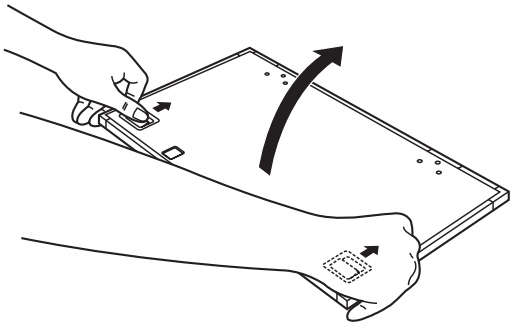
Set the exposure time

Set the exposure time so that the exposure finishes right before the reading starts.

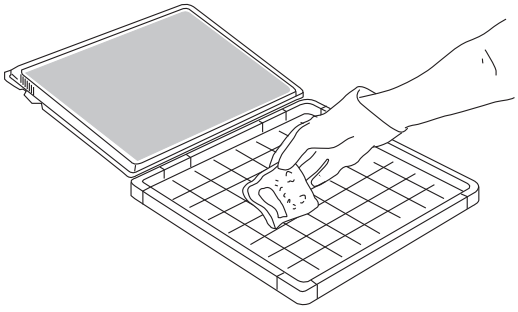
Note: *The exposure time of the storage phosphor screen is approximately one twentieth of the time required for X-ray film. Take this into consideration when setting the initial exposure time.*

TIP: For increased image quality, minimize the time between exposing the storage phosphor screen and reading it with the Typhoon FLA 9000.

7.3 Exposing the storage phosphor screen

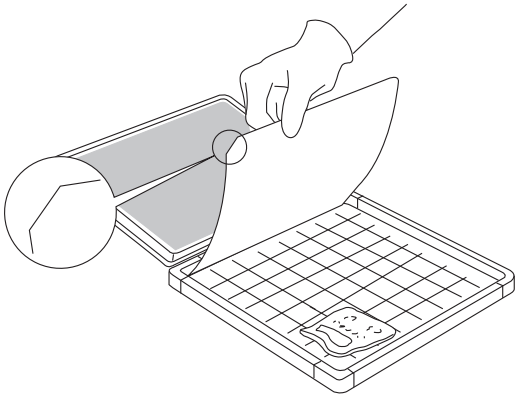
Step	Action
1	Erase the storage phosphor screen completely.
2	Wrap the radio isotope sample with plastic film. Make sure not to wrinkle the wrapping film. ***Note:*** *When using a tritium storage phosphor screen to detect tritium, place the sample directly on the storage phosphor screen. A tritium storage phosphor screen can be used only once.*
3	Open the top cover of the cassette. Unlock the cassette by sliding the buttons on both sides up. 

Step	Action
4	Place the sample on the cassette. Make sure that the sample surface faces up.



Note: *Keep the radio imaging sample away from the edge of the storage phosphor screen. Otherwise, the recorded data may become corrupted.*

5	Place the storage phosphor screen in the cassette, with the exposure surface of the storage phosphor screen facing the sample. Make sure that the notch of the storage phosphor screen is in the front left corner of the cassette as shown below.



6	Close the cover of the cassette. Press on the cover until it clicks into place.

8 Reading phosphorimaging samples

8.1 Set the reading conditions

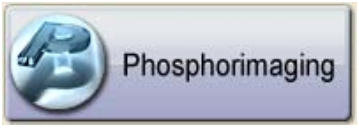
Start the system

1 Turn on Typhoon FLA 9000 and the computer.

2 Start the Typhoon FLA 9000 Control Software.

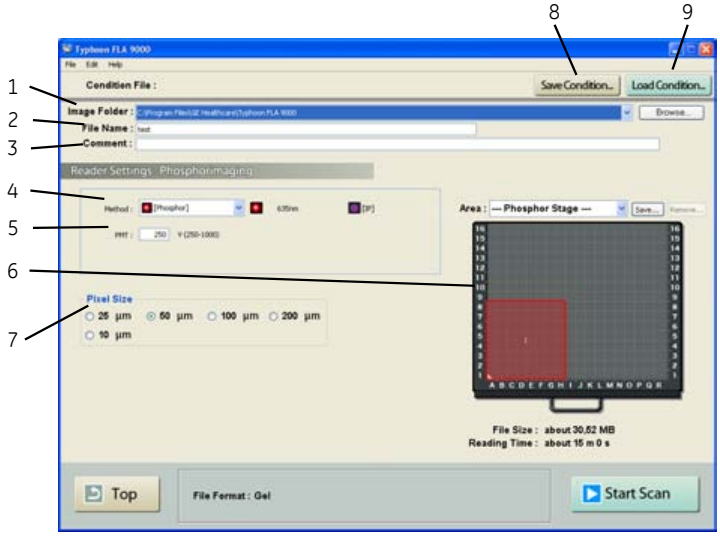
Set the reading conditions

Click the ***Phosphorimaging*** button to reach the ***Reader Settings*** window for the phosphorimaging mode.



Perform the tasks specified in the numbered table below.

Note: *All parts in the window are described in Section 1.4 Typhoon FLA 9000 Control Software, on page 12.*

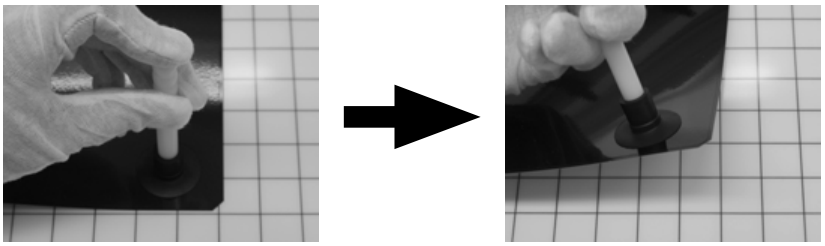


Part	Description
1	***Image folder:*** specify where to save the file after the reading.
2	***File Name:*** enter the name of a file to save image data.

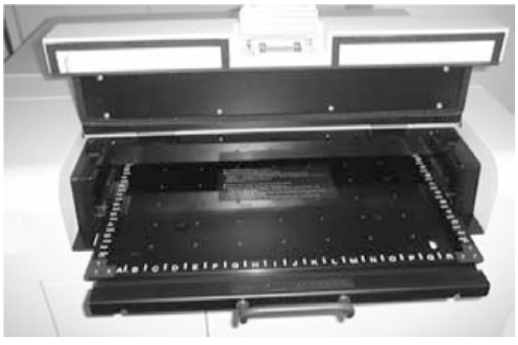
Part	Description
3	***Comment:*** enter an optional comment. The comment is embedded in the file where the image is saved, and can be viewed with the analyzing software.
4	Displays the laser and the filter used. In phosphorimaging mode, the laser is automatically set to ***635 nm***, and the filter is automatically set to ***IP***. ***Note:*** *To use the phosphorimaging mode, the 635 nm laser must be loaded, and the IP filter must be set. If these conditions are not fulfilled, the* ***Reader Settings*** *window for the phosphorimaging mode cannot be accessed.*
5	***PMT:*** set the voltage of the photo-multiplier tube. The higher the value, the higher the sensitivity.
6	Set the scanning area. 1 Select a method in the drop-down menu. 2 Drag the red square to the desired position of the scanning area. 3 Drag the sides of the red square as needed to adjust the size of the scanning area.
7	***Pixel Size:*** set the pixel size. Choose a **small** pixel size for **high quality** images. Note that a small pixel size setting increases the reading time and the size of the image file.
8	***Save Condition...***: click this button to save the current reading conditions in a file, if desired. For details, refer to the User Manual.
9	***Load Condition...***: click this button to load previously saved reading conditions, if desired. For details, refer to the User Manual.

8.2 Place the storage phosphor screen on the phosphor stage

Step	Action
1	Turn down the lighting in the room.
2	Place the cassette with the exposed storage phosphor screen on the side of the phosphor stage.

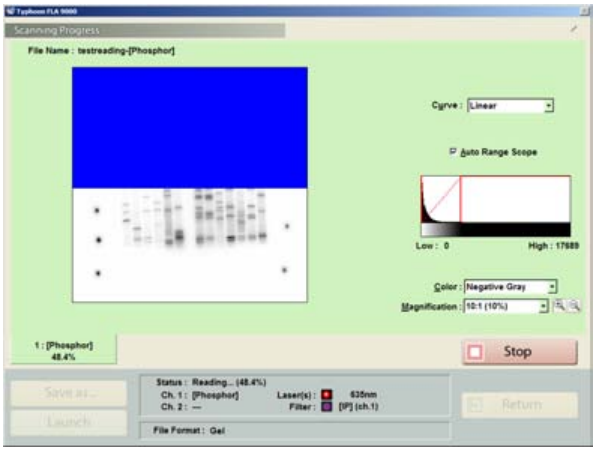
Step	Action
3	Pick up the storage phosphor screen and move it to the phosphor stage.  • Press one end of the suction rod against the storage phosphor screen, then place your finger on the other end and lift the suction rod. • Release the storage phosphor screen by releasing your finger from the suction rod.
4	Place the storage phosphor screen on the back of the phosphor stage, with the white or blue reading surface of the storage phosphor screen facing up.

8.3 Place the phosphor stage in the Typhoon FLA 9000

Step	Action
1	Open the lid of the Typhoon FLA 9000.
2	Position the phosphor stage with the storage phosphor screen face down. 
3	Push the phosphor stage inwards until it stops.
4	Close the lid of the Typhoon FLA 9000.

8.4 Read the sample

Click the ***Start Scan*** button to start reading.



Note: *If you click the **Stop** button during reading, the part that has not been read yet will be saved as an image with a data value of 0 (light intensity of 0).*

Note: *When you click the **Stop** button, the reading is aborted. You cannot start reading again from the location where reading stopped.*

Adjust the display parameters

Parameter	Explanation
Curve	Adjust the gradations in the image. ***Exponential*** Exponential gradation adjustment ***Linear*** Linear gradation adjustment ***Sigmoid*** Sigmoid gradation adjustment
Magnification	Zoom in or out.
Auto range scope	Check this option to optimize the tones automatically.

<table>
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<tr><td>Blue</td><td>Black</td><td>Blue</td></tr>
<tr><td>Color32</td><td>Blue</td><td>Red</td></tr>
</table>
</td></tr>
</table>

9 Reading digitization samples

9.1 Set the reading mode and reading conditions

Start the system

1 Turn on Typhoon FLA 9000 and the computer.

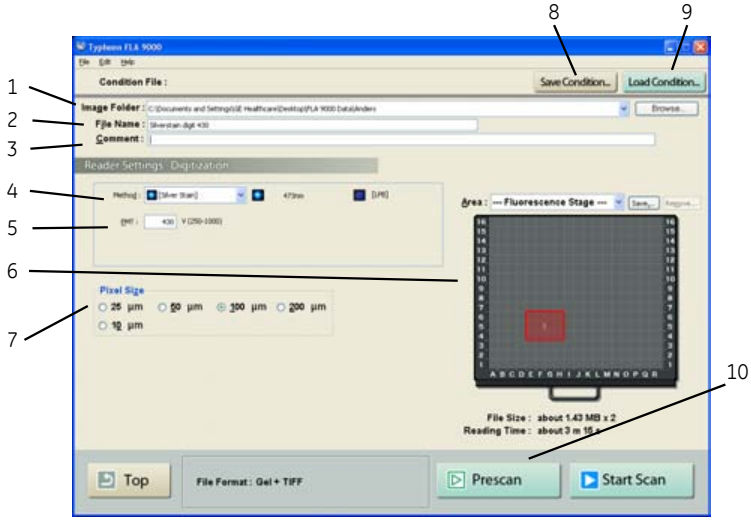
2 Start the Typhoon FLA 9000 Control Software.

Set the reading conditions

Click the ***Digitization*** button of the main window to reach the Reader Settings window for the digitization mode.

Perform the tasks specified in the numbered table below.

Note: *All parts in the window are described in Section 1.4 Typhoon FLA 9000 Control Software, on page 12.*



Part	Description
1	***Image folder:*** specify where to save the file after the reading.
2	***File Name:*** enter the name of a file to save image data.

Part	Description
3	***Comment:*** enter an optional comment. The comment is embedded in the file where the image is saved, and can be viewed with the analyzing software.
4	***Method:*** Set the method to use in the scan.
5	***PMT:*** set the voltage of the photo-multiplier tube. The higher the value, the higher the sensitivity.
6	Set the scanning area. 1 Select a method in the drop-down menu. 2 Drag the red square to the desired position of the scanning area. 3 Drag the sides of the red square as needed to adjust the size of the scanning area.
7	***Pixel Size:*** set the pixel size. Choose a **small** pixel size for **high quality** images. Note that a small pixel size setting increases the reading time and the size of the image file.
8	***Save Condition...***: click this button to save the current reading conditions in a file, if desired. For details, refer to the User Manual.
9	***Load Condition...***: click this button to load previously saved reading conditions, if desired. For details, refer to the User Manual.
10	***Prescan***: Click to quickly prescan the sample at a resolution of 1000 µm.

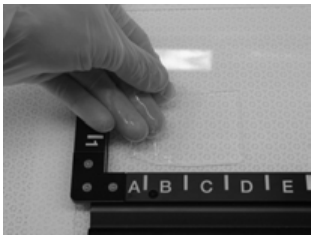
9.2 Place the sample on the stage

Placing a gel sample on the Fluor stage

Note:

- *The sample must not be thicker than 30 mm. For solutions, the maximum height is 4 mm.*
- *Make sure there are no bubbles or gaps on the contact surface.*

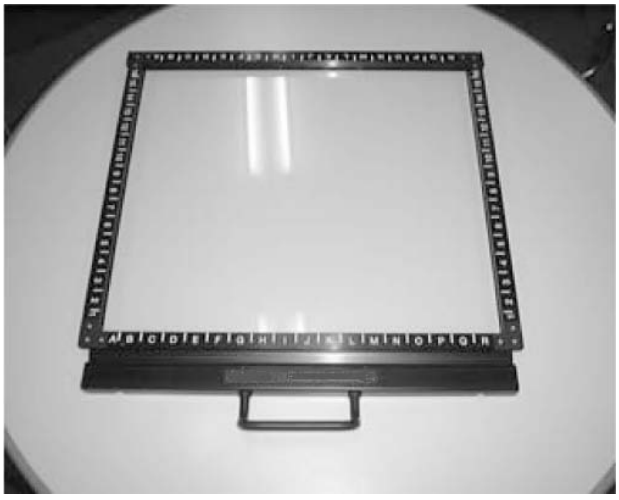
Step	Action
1	Place the sample on the Fluor stage.



Step	Action
2	Place the fluorescent plate for digitization on top of the sample.

9.3 Place the stage in the Typhoon FLA 9000

Step	Action
1	Open the lid of the Typhoon FLA 9000.
2	Place the stage on the Typhoon FLA 9000 with the printed side of the frame facing up.

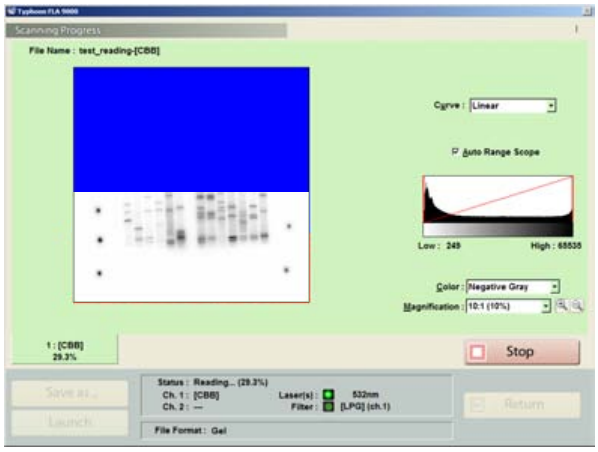


Step	Action
3	Press the stage all the way in.

Step	Action
4	Close the lid.

9.4 Read the sample

Click the ***Start Scan*** button to start reading.



Note: *If you click the **Stop** button during reading, the part that has not been read yet will be saved as an image with a data value of 0 (light intensity of 0).*

Note: *When you click the **Stop** button, the reading is aborted. You cannot start reading again from the location where reading stopped.*

Adjust the display parameters

Parameter	Explanation
Curve	Adjust the gradations in the image. ***Exponential*** Exponential gradation adjustment ***Linear*** Linear gradation adjustment ***Sigmoid*** Sigmoid gradation adjustment
Magnification	Zoom in or out.
Auto range scope	Check this option to optimize the tones automatically.

<table>
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<tr><td>Blue</td><td>Black</td><td>Blue</td></tr>
<tr><td>Color32</td><td>Blue</td><td>Red</td></tr>
</table>
</td></tr>
</table>

Appendix A Daily maintenance

Cleaning the stage

CAUTION
Wear gloves to prevent direct contact with chemical substances.

Step	Action
1	Remove the stage from the main body of the instrument.
2	Wipe the stage with a sponge moistened with a fluorescence-free neutral detergent.
3	Thoroughly rinse the stage with water and dry with a lint-free cloth.
4	Place the stage in the main body of the instrument.

Appendix B Periodic maintenance

Cleaning the outside of Typhoon FLA 9000

Clean the outside with a moist soft cloth and a mild detergent. Wipe afterwards with a dry soft cloth.

Maintenance of the SHG laser

If you use the SHG laser in the Typhoon FLA 9000, it will require periodical calibration. When the Typhoon FLA 9000 is switched on, it automatically executes calibration. You do not need to do a manual calibration if the Typhoon FLA 9000 is used at least once a month.

CAUTION

Activate the Typhoon FLA 9000 at least once every 30 days to execute calibration. This calibration ensure that the SHG laser operates properly. Failure to calibrate the Typhoon FLA 9000 every 30 days reduces the lifespan of the SHG laser.

Operation procedures:

1 Turn on the Typhoon FLA 9000 and the computer.

2 Wait until warm-up and self-diagnosis is completed, and the scanner is ready. Only the power lamp on the upper left panel is lit. The automatic calibration has now been performed.

3 Turn off the Typhoon FLA 9000 and the computer.

Replacing the filters in the Typhoon FLA 9000

See the instruction in *Appendix C Replacing the filters, on page 66*.

Appendix C Replacing the filters

Remove the filter module from the scanner

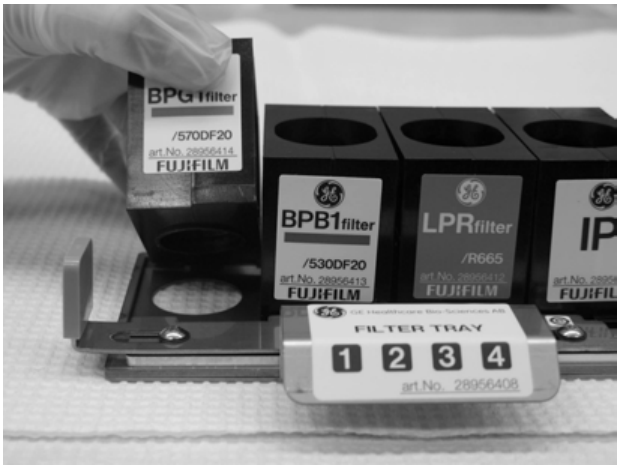
Step	Action
1	Click the ***Filter Module*** button in the main window.
2	Press the button on the filter change door.
3	Grip the knob and open the filter change door.

Step	Action
4	Pull out the filter module.

Remove and replace filters in the filter module

Step	Action
1	Pull the green locking lever to the left.

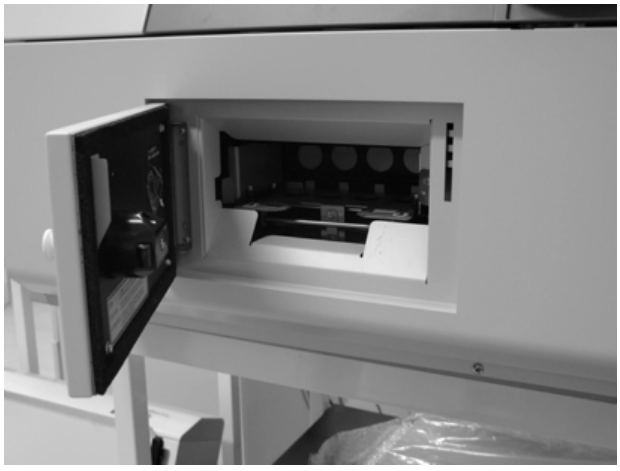
Step	Action
2	Tilt the filter backwards and pull it out from under the metal lip.



3	Place the new filter under the rear metal lip, and lower the front edge of the filter.
4	Push the green locking lever to the right. Make sure all filters are locked.

Place the filter module in the scanner

Step	Action
1	Open the filter change door.



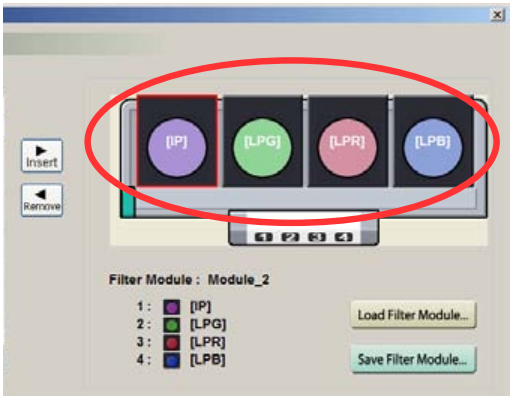
Step	Action
2	Insert the filter module in the filter module holder.

Step	Action
3	Close the filter change door.

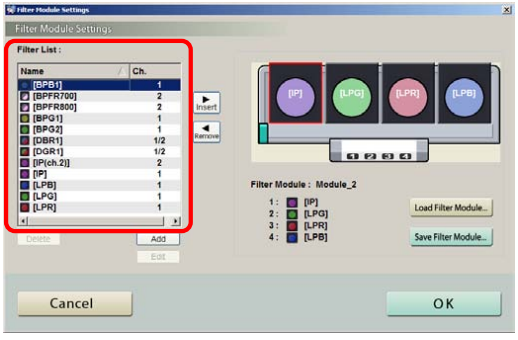
Register the filter change in the Typhoon FLA 9000 Control Software

Step	Action
1	Click the ***Filter Module*** button in the main window.

Step	Action
2	Click the desired filter position on the filter tray.



3	Select the filter to be registered from ***Filter List***.



4	Click the ***Insert*** button to register the filter.

TIP: You can also drag the filter from ***Filter List*** to the desired filter position.

5	Click the ***OK*** button.

Appendix D Default sample detection methods

473 nm laser

Reagent name	Excitation wavelength	Emission light wavelength	Filter
Alexa Fluor™488	495	519	LPB
AttoPhos™	482	560	LPB
Cy™2	489	506	LPB, DBR1, BPB1
DY-485XL	485	560	LPB
ECL Plus™	420	460	LPB
EGFP	489	508	LPB
FAM™	490	520	LPB
FITC	494	520	LPB, DBR1
Flamingo™	512	535	LPB
Pro-Q™Emerald488	510	520	LPB
Qdot 605	-	603	LPG
Qdot 655	-	655	LPR
Qdot 705	-	702	LPR
Qdot 800	-	792	LPR
SYBR™ Gold	495	537	LPB
SYBR Green I	494	521	LPB
SYBR Green II	492	513	LPB
SYBR Safe™	502	530	LPB
SYPRO™ Orange	472	570	LPB
SYPRO Ruby	450	610	LPG
SYPRO Orange	490	640	LPG

532 nm laser

Reagent name	Excitation wavelength	Emission light wavelength	Filter
Alexa Fluor 53X	532	554	LPG
Alexa Fluor 555	553	568	LPG
Cy3	550	570	LPG, DGR1, BPG1
Deep Purple™	528	591	LPG
DY-520XL	520	664	LPR
EtBR	518	605	LPG
HEX™	535	553	LPG
HNPP	550	562	LPG
Pro-Q Diamond	555	580	LPG
RITC	554	577	LPG
ROX™	535	567	LPG
SYPRO Red	547	631	LPR
TAMRA™	542	568	LPG

635 nm laser

Reagent name	Excitation wavelength	Emission light wavelength	Filter
Alexa Fluor 647	653	669	LPR
Cy5	649	670	LPR, DBR1, DGR1
DDAO Phosphate	634	665	LPR
DY-635	647	671	LPR

685 nm laser

Reagent name	Excitation wavelength	Emission light wavelength	Filter
Alexa Fluor 680	679	702	BPFR700
Alexa Fluor 700	689	700	BPFR700
Cy5.5	675	694	BPFR700
DY-676	674	699	BPFR700

Reagent name	Excitation wavelength	Emission light wavelength	Filter
DY-682	690	709	BPFR700
IRDye™ 680	683	710	BPFR700
IRDye 700	689	700	BPFR700
Krypton™ Infrared	690	718	BPFR700

785 nm laser

Reagent name	Excitation wavelength	Emission light wavelength	Filter
Alexa Fluor 750	746	775	BPFR800
Alexa Fluor 790	784	814	BPFR800
DY-781	783	800	BPFR800
IRDye 800	778	806	BPFR800

Appendix E Specifications

Scanning specifications

Parameter	Data
Scanned image size	40 × 46 cm
Pixel size	10, 25, 50, 100 or 200 µm and a 1000 µm prescan
Gradation bit depth	16-bit
Dynamic range	Five orders of magnitude
Image capacity	• 3510 MB (10 µm) • 561.52 MB (25 µm) • 140.35 MB (50 µm) • 35.09 MB (100 µm) • 8.77 MB (200 µm)
Detection sensitivity	• Storage phosphor screen ^{14}C: Detectable to 0.9 dpm/mm^2. • Fluorescent: DNA/SYBR-Green 7 pg/band • Enzyme-multiplied fluorescence sensitivity: pBR328/AttoPhos 100 fg/spot Outside dimensions & weight

Dimensions & weight

Unit	Dimension (mm, w×d×h)	Weight (kg)
Reading block	900 × 800 × 400 (projections not included)	97
Storage phosphor screen cassette	460 × 430 × 20	Approx. 2.5
Phosphor stage	502 × 538 ×45	Approx. 2.5
Multi stage	502 × 538 ×45	Approx. 2.8
Fluor stage	502 × 538 ×45	Approx. 2.3
FLA Image Eraser	603 × 512 × 164	14.5

Power supply

Parameter	Data
Input voltage	100 to 240V~ (AC), single phase
Allowable variations in voltage	±10%
Frequency	50 to 60 Hz
Rated current	1.5 to 3.0 A

Environmental conditions

Parameter	Data
Operating conditions	Temperature: +15°C to +30°C Humidity: 20% to 75% RH (no dew condensation)
Non-operating conditions	Temperature: -10°C to +40°C Humidity: 20% to 70% RH (no dew condensation)
Transportation & storage temperature	Temperature: -25°C to +70°C Humidity: 10% to 80% (no dew condensation)
Heat radiation	151 W/h (reader block + FLA Image eraser)
Lighting	It is recommended to lower the lighting level to about 20 lux when moving a sample from the cassette into Typhoon FLA 9000 after exposure.
Where to use	Indoor use only
Maximum altitude for use	2,000 m above sea level
Overvoltage category	Transient overvoltage category II
Applicable rated pollution degree	Pollution Degree 2

For local office contact information, visit
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